



Appl. No. 10/648,855
Information Disclosure Statement February 27, 2004

Appl. No. 10/648,855- 10/648,885
Applicant Hoard, et al.
Filed 08/26/2003
Title Method for NOx Reduction

TC/A.U. 1724
Examiner

Docket No. 13657-E

Mail Stop Non-Fee Amendment
Commissioner for Patents
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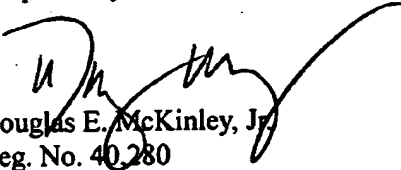
Pursuant to the duty of disclosure under 37 CFR §§ 1.56, 1.97, and 1.98, the documents listed on the attached Form(s) PTO/SB/08 are being brought to the attention of the Examiner in charge of the above-identified application. This is being submitted prior to the receipt of the first office action on the merits and within 3 months of the date of receipt of the International Search Report.

The Examiner is respectfully requested to initial the space adjacent each document entry on the Form(s) PTO/SB/08, and to return a copy of the initialed Form(s) PTO/SB/08 to confirm that the documents have been considered and have been officially made of record in this application.

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If the Examiner has any questions or wishes to discuss this application, the Examiner is invited to telephone the undersigned representative at the number set forth below. Any fees required for consideration of this paper are hereby authorized to be charged to our Deposit Account No. 502149.

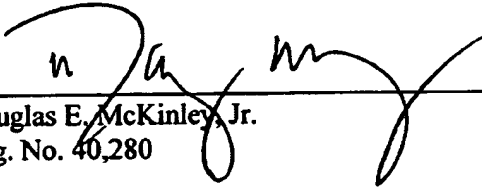
Respectfully submitted,


Douglas E. McKinley, Jr.
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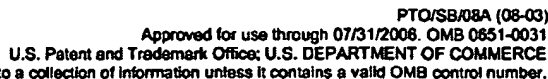
The undersigned hereby certifies that the forgoing Information Disclosure pleading dated December 5, 2003, PTO Form PTO/SB/08a (1 page), PTO Form PTO/SB/08b (5 pages), 54 references, and return postcard are being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Mail Stop Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

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Douglas E. McKinley, Jr.
Reg. No. 40,280

Feb 27, 2004
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Sheet	1	of	1
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Application Number	10/648,855 10/648,885
Filing Date	08/26/2003
First Named Inventor	Hoard et al.
Art Unit	1724
Examiner Name	unknown
Attorney Docket Number	E-13657

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FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁴
		Country Code ² -Number ⁴ -Kind Code ³ (if known)				
		DE 3642018A1	09 12 1986	Volkswagon AG		
		DE 3735151A1	16 10 1987	Toyota		
		EP 1 214 976 A1	19 6 2002	Delphi Technolo		

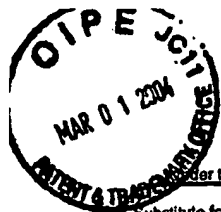
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1

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15

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NON PATENT LITERATURE DOCUMENTS

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		EPA420-F-00-057 2000 U.S. Environmental Protection Agency: Office of Transportation and Air Quality. Regulatory announcement: Heavy -Duty Engine and Vehicle Standards and Veh	
		C. Shenk, C. Laroo. SAE Technical Paper Series #2003-01-0042. SAE: Warrendale, PA, 2003	
		EPA420-R-00-026, December 2000, Office of Transportation and Air Quality. Heavy-Duty Standards/Diesel Fuel RIA - Chapter III: Emission Standards Feasibility	
		J. Parks, B. Epling, A. Watson, and G. Campbell, Durability of NOx Adsorbers, Presentation, 8th Diesel Engine Emissions Reduction Conference, San Diego, CA, Aug. 25-59, 2002	
		T.V. Johnson, SAE Technical Paper Series #2003-01-0039. SAE Warrendale, PA, 2003	
		S. Faulkner, NOx Adsorber Development, Presentation, 8th Diesel Engine Emissions Reduction Conference, San Diego, CA, Aug. 25-59, 2002	
		R. Hammerle. Urea Selective Catalytic Reduction and Diesel Particulate Filter., Presentation, 8th Diesel Engine Emissions Reduction Conference, San Diego, CA, Aug. 25-59, 2002	
		J. Hoard and H. Servanti (Eds.), Plasma Exhaust Aftertreatment, SAE SP-1395, SAE: Warrendale, PA, 1998	
		M.L. Balmer, G. Fisher, and J. Hoard (Eds.), Non-Thermal Plasma for Exhaust Emission Control: NOx HC, and Particulates, SAE SP-1483, SAE: Warrendale, PA, 1999	
		M.L. Balmer, G. Fisher, and J. Hoard (Eds.), Non-Thermal Plasma, SAE SP-1566, SAE: Warrendale, PA, 1998	

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Sheet 2 of 5

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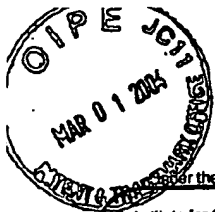
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		M.L. Balmer, G. Fisher, and J. Hoard (Eds.), Non-Thermal Plasma Emission Control Systems, SAE SP-1639, SAE: Warrendale, PA, 1998	
		S. Yoon, A. G. Panov, R. G. Tonkyn, A. C. Ebeling, S. E. Barlow, M.L. Balmer, Catalysis Today 72 (2002) 243	
		S. Yoon, A. G. Panov, R. G. Tonkyn, A. C. Ebeling, S. E. Barlow, M.L. Balmer, Catalysis Today 72 (2002) 251	
		J. Hoard SAE Technical Paper Series #2001-01-0185. SAE: Warrendale, PA, 2001	
		C.L. Aardahl, K.G. Rappe, P. W. Park, C.S. Ragle, C.L. Boyer, S.A. Faulkner SAE Technical Paper Series #2003-01-1186. SAE Warrendale, PA, 2003	
		B.M. Penetrante, R.M. Brusasco, B.T. Merril, W.J. Pitz, G.E. Vogtlin, M.C. Kung, H.H. Kung, C.Z. Wan, K.E. Voss SAE Technical Paper Series #982508. SAE Warrendale, PA, 1998	
		R. Dorai, M.J. Kushner SAE Technical Paper Series #1999-01-3683. SAE Warrendale, PA, 1999	
		J. Hoard and A.Panov, SAE Technical Paper Series #2001-01-3512. SAE Warrendale, PA, 2001	
		A.G. Panov, R.G. Tonkyn, M.L. Balmer, C.H.F. Peden, A. Malkin, and J.W. Hoard, SAE Technical Paper Series #2001-01-3513. SAE Warrendale, PA, 2001	
		S.J. Schmieg, B.K. Cho, and S. H. Oh, SAE Technical Paper Series #2001-01-3565. SAE Warrendale, PA, 2001	

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		S. E. Thomas, J. T. Shawcross, R. Gillespie, D. Raybone, A. R. Martin, SAE Technical Paper Series #2001-01-3568. SAE: Warrendale, PA, 2001	
		K. G. Rappe, C.L. Aardahl, C.F. Habeger, D. N. Tran, M.A. Delgado, L.Q. Wang, P.W. Park, M. L Balmer SAE Technical Paper Series #2001-01-3570. SAE: Warrendale, PA, 2001	
		B.M. Penetrante, R. M. Brusasco, B.T. Merritt, W.J. Pitz, G.E. Vogtlin, SAE Technical Paper Series #1999-01-3687. SAE: Warrendale, PA, 1999	
		B.M. Penetrante, R. M. Brusasco, B.T. Merritt, W.J. Pitz, G.E. Vogtlin, SAE Technical Paper Series #1999-01-3637. SAE International: Warrendale, PA, 1999	
		D.N. Tran, C.L. Aardahl, K.G. Rappe, P.W. Park, C.L. Boyer, Appl. Catal. B, submitted	
		F.C. Meunier, V. Zuzaniuk, J.P. Breen, M. Olsson, J.R.H. Ross, Catal. Today 59 (2000) 287.	
		F.C. Meunier, V. Zuzaniuk, J.P. Breen, M. Olsson, J.R.H. Ross, J. Catal. 187 (1999) 493.	
		T. Maunula, Y. Kintaichi, M. Inaba, M. Haneda, K. Sato, H. Hamada, Appl. Catal. B 15(1998)291	
		E. Seker, J. Cavataio, E. Gulari, P. Lorphongpaiboon, S. Osuwan, Appl. Catal. A 183 (1999) 121.	
		A. Keshavaraja, X. She, M. Flytzani-Stephanopoulos, Appl. Catal. B 27(2000) L1.	

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		S. Sumiya, M. Saito, M. Furuyama, N. Takezawa, K. Yoshida, Rest. Kinet. Catal. Lett. 64 (1998) 239.	
		K. Shimizu, A. Satsuma, T. Hattori, Appl. Catal. B 16 (1998) 319.	
		K. A. Bethke, H.H. Kung, J. Catal. 181 (1997) 93.	
		M.C. Kung, P.W. Park, D.W. Kin, H.H. Kung, J. Catal. 181(1999) 1.	
		T. Maunula, T. Kintaichi, M. Haneda, H. Hamada, Catal. Lett. 61 (1999) 121.	
		P.W. Park, C.S. Ragle, C.L. Boyer, M.L. Balmer, M. Engelhard, D. McCready, J. Catal. 210 (2002) 97.	
		T. Maunula, J. Aloha, H. Hamada, Appl. Catal. B 26 (2000) 173.	
		F.C. Meunier, R. Ukropec, C. Stapleton, J. R. H. Ross, Appl. Catal. B 30 (2001) 163.	
		K.Shimizu, J. Shibata, H. Yoshida, A. Satsuma, T. Hattori, Appl. Catal. B 30 (2001) 151.	
		T. Chafik, S. Kameoka, Y. Ukisu, T. Miyadera, J. Molec. Catal. A 136 (1998) 203.	

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		L.-Q. Wang, C.L. Aardahl, K.G. Rappe, D.N. Tran, M.A. Delgado, C.F. Habeger, J. Mater. Res. 17 (2002) 1843.	
		F.C.Meunier, J.P.Breen, J.R.H.Ross, Chem. Commun. 1999 (1999) 259.	
		V. Zuzaniuk, F.C.Meunier, J.R.H.Ross, Chem. Commun. 1999 (1999) 815.	
		M. Sasaki, H. Hamada, Y.Kintaichi, T. Ito, Catal. Lett. 15 (1992) 297.	
		R.A. Grinstedt, H.W. Jen, C.N. Montreuil, M.J. Rokosz, M. Shelef, Zeolites 13 (1993) 602.	
		R. Keiski, H. Raisanen, M. Harkonen, T. Maunula, P. Niemisto, Catal. Today 27 (1996) 85.	
		J. Bonadies, Performance Evaluation of the Delphi Non-Thermal Plasma System Under Transient and Steady-State Conditions. Presentation San Diego CA, Aug 25-29, 2002.	
		P. W. Park, H.H. Kung, D. W. Kin, M.C. Kung, J. Catal. 184 (1999) 440.	
		L.A. Rosenthal, D.A. Davis, IEEE Trans. Ind. Appl. I-5 (1975) 328.	
		A.G. Panov, R. Tonkyn, S. Yoon, et al. Reduction Behavior of Almina and Zeolite Catalysis in Combination with Non-Thermal Plasma. Presentation San Diego CA, Aug 25-29, 2002.	

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